DOCUMENT RESUME

ED 331 225 EC 300 206

TITLE Home Accessibility 1. Living as You Like To Live. Designing for All.
INSTITUTION PAM Assistance Centre, Lansing, MI.
SPONS AGENCY Department of Education, Washington, DC.; Michigan State Board of Education, Lansing.
PUB DATE Feb 90
NOTE 9p.; For a related document, see EC 300 207.
PUB TYPE Guides - Non-Classroom Use (055) -- Collected Works - Serials (022)
JOURNAL CIT PAM Repeater; n58 Feb 1990

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Accessibility (for Disabled); Building Design; Building Innovation; Design Requirements; *Physical Disabilities; Physical Mobility; Space Utilization

ABSTRACT

The brochure provides suggestions for adapting or building living quarters to accommodate persons with physical limitations. Encouraged is barrier-free universal design to allow all persons, disabled or able bodied, to move freely, independently, and safely in their surroundings. Illustrations and text provide guidance for design of ramps, front doors, more accessible bathrooms, kitchens, and clothes closets. A large cut-away diagram of a house details possible modifications. Also included are the sources of 13 additional resources and the addresses of seven barrier free contractors/consultants. (DB)

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ED331225

FEBRUARY, 1990

PAM REPEATER

PUBLISHED AT:
PAM Assistance Centre
601 West Maple Street
Lansing, MI 48906
(517) 371-5897 or
1-800-274-7426

Arselia Ensign, Editor

HOME ACCESSIBILITY, 1

Living as You Like to Live
No. 58

*This is the first in a series of six **REPEATERS** addressing a topic which the PAM staff feels will meet the needs of many; adapting or building living quarters to accommodate persons with physical limitations. Some very personal choices are involved in making your own home comfortable and accessible. Sister Kathryn Mullarkey, F.S.E., PAM's Information Specialist, will be suggesting options and resources for the design of all of your living areas, including kitchen, bath and storage areas. We want our readers to achieve that "my home is my castle" feeling!*

DESIGNING FOR ALL

Environmental design is an issue that has an immense impact on society's response to disability. The problem is how to expand societal attitudes to view barrier-free design as meeting the needs of the general population rather than as a singular good for the disabled population.

The federal and state legislatures passed laws in the late 1960's requiring that public accommodations that were funded wholly or in part with federal or state monies must be "accessible to and usable by the elderly and handicapped." These laws only affected facilities to be constructed in the future, requiring them to be barrier-free. Soon after this a number of states began passing parallel laws requiring privately funded accommodations, no matter when the buildings were constructed.

Section 504 of the 1973 Rehabilitation Act came to be known as the "bill of rights for the disabled." This forty-five word statement had and continues to have far-reaching implications for its implementation. Section 504 says:

> *No otherwise qualified handicapped individual in the United States, as defined in section 7(6), shall, solely by reason of his handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.*

The year 1981 was proclaimed the International Year of Disabled Persons by the United Nations' General Assembly. Full participation and equality was the theme adopted with the task of encouraging the rehabilitation of the world's estimated 450 million people who have some form of a disablilty. The goal of the UN of "full participation and equality" implies that no part of the built environment shall be designed in a manner which excludes certain groups of people by virtue of their disability.

Some architectural barriers more effectively threaten or curtail independence than a disability itself. Today, ironically, the greatest obstacles to a disabled person's independence are often in their own homes.

Living spaces have long been designed for use by one 'average' physical type - young, fit, male, adult. The fact is that only some of us fit that description, and none of us can be described that way for a lifetime. As children, as older adults, or as physically disabled people, millions are never average. Many millions more, because of a broken limb, serious illness, or pregnancy, know how unsettling it is to try to function in an environment that no longer meets their needs.

The point is, no 'average' actually represents the majority because too many people have vastly differing requirements. The composition of our population is changing.

Architectural barriers are problems not only for people with physical disabilities, but for others as well. R. L. Mace describes the following as being handicapped: The child or small person who needs to use a coin telephone and cannot reach the high coin slot is handicapped. The elderly person whose impaired vision makes it impossible to read scarcely legible signs and markings, the student whose study space is poorly lighted, the pregnant woman who must climb long flights of stairs, the mover who must carry a piano through a narrow door, as well as a person who uses a walker or wheelchair and cannot climb stairs or enter a toilet stall - all are handicapped by facilities. An environment that has been designed for the 'average' person will not meet the needs of most of the people.

Barrier-free, accessible, universal, environmental, ergonomic design - by whatever name - means simply that all persons, able bodied and disabled, young and old, tall and short, may move freely, independently, conveniently, and safely throughout their surroundings.

Many features that make the built environment accessible to, and convenient for use by disabled persons, will also make it more manageable for others.

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The concept of barrier-free design promotes designing every product and building so that everyone can use them to the greatest extent possible - every faucet, light fixture, shower stall, public telephone, or entrance.

Today the concept of barrier-free design is becoming more generally accepted because all of us are "handicapped" at some time or other and this condition is easier to accept when we are able to move about freely and independently. Through careful planning, you can make your house accessible to a wheelchair user and convenient for able-bodied people at the same time - and still retain (if not increase) your home's market value.

The concept and cost of home modifications are overwhelming for many persons. The first and perhaps most important design modification is for entrances. We all need to feel free to come and go at will. A few steps, or even one step, at the entrance to a house can keep a person with certain disabilities a virtual prisoner.

A ramp is a simple design structure and as such does not involve complicated building techniques. A ramp built over a flight of stairs can make an entrance accessible, but the gradient of the ramp should never be less than twelve feet of length for every one foot of rise. When the installation of a ramp is not practical or safe, an alternative may be a porch lift or an alternative lifting device.

Ramps can be made of concrete, wood or a mound of earth. Prefabricated metal ramps may be obtained to meet the needs of a particular home. Specific information on ramp construction and companies that manufacture and distribute ramps will appear in a future publication.

The front door to the house is made easier for everyone to open by one simple change - a lever handle in place of the traditional knob. This is appreciated by anyone returning home with hands and arms full of parcels, a briefcase, grocery bags, a baby and a diaper bag, or a cane. Small children can manipulate a lever more easily than a knob, as can those with arthritis or other physical disabilities that limit a full range of movement.

Once inside the home, the bathroom is the next major area of accessibility. It needs to be functional yet retain an aesthetic appearance. A clear floor space of five feet in diameter is suggested for anyone using a wheelchair or other mobility aid. A bathroom designed to be barrier free is slightly larger than a conventional bathroom to accommodate wheelchair users.

Placing the bathtub faucet close to the outside rim of the tub makes it easier for everyone to reach. Wheelchair users and other mobility impaired people need to have the controls in this offset position. Non-disabled people will discover that what is a necessity for some can be an added convenience for others. This offset tub

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control requires only about six inches of additional supply pipe. Since the additional cost of materials and labor should not be any more than $5 to $20 per tub, offset tub controls could easily become standard features in all housing.

Kitchens are next; they also need to be functional yet aesthetic. A kitchen is more than a place where food is prepared and dishes washed. It also serves as a gathering place for family and friends. Even though not every member of the family is directly involved in food preparation, the kitchen should be convenient, safe, and comfortable for everyone in the house.

The kitchen has the usual appliances -- oven, stove, and refrigerator. If the refrigerator is a standard side-by-side refrigerator/freezer and the stove has front or side mounted controls, both can be used by a greater number of people. The greater advantage of the side-by-side refrigerator/freezer is that it places both the freezer and refrigerator compartments within reach of everyone, even children.

Although more expensive than other models, the side-by-side refrigerator/freezer is a universally usable product that is already on the market. A medium priced side-by-side refrigerator/freezer will cost approximately $150 more than a medium priced over-under refrigerator/freezer.

The bedroom clothes closet rods appear to be standard. The difference is in the way the rods are mounted. Notched mounting blocks on either wall allow the rods to be lowered or raised to accommodate people of all heights and ages. Children's closets can "grow" with them. People temporarily restricted to wheelchairs can lower the rods to be within their reach.

The adjustable closet rod detail may cost the price of two pieces of 1"x4" and the time it would take a carpenter to cut the notches in each. If individually custom-made by a competent carpenter, they should cost no more than $20 to $30 a pair...much less than mass produced. Manufactured and sold through building suppliers, these brackets and rods would cost no more than fixed hardware and could be a profitable item to the manufacturer. Clearly, this universal feature could be made standard in all housing.

(Pictures used with permission from: Universal Design by U.S. Dept. of Housing & Urban Development.)

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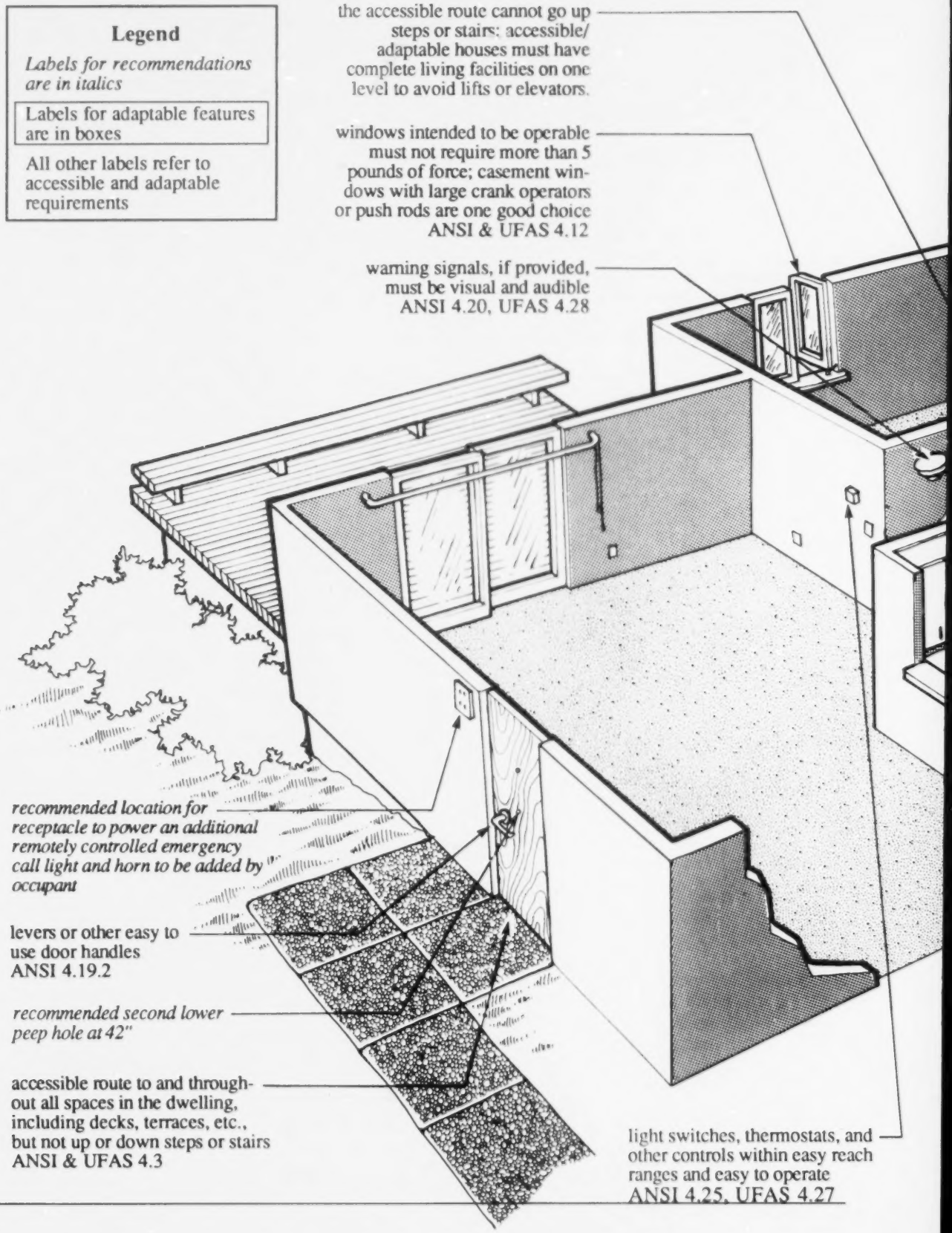
Legend
Labels for recommendations are in italics
Labels for adaptable features are in boxes
All other labels refer to accessible and adaptable requirements
the accessible route cannot go up steps or stairs: accessible/ adaptable houses must have complete living facilities on one level to avoid lifts or elevators.
windows intended to be operable must not require more than 5 pounds of force; casement windows with large crank operators or push rods are one good choice ANSI & UFAS 4.12
warning signals, if provided, must be visual and audible ANSI 4.20, UFAS 4.28
recommended location for receptacle to power an additional remotely controlled emergency call light and horn to be added by occupant
levers or other easy to use door handles ANSI 4.19.2
recommended second lower peep hole at 42"
accessible route to and throughout all spaces in the dwelling, including decks, terraces, etc., but not up or down steps or stairs ANSI & UFAS 4.3
light switches, thermostats, and other controls within easy reach ranges and easy to operate ANSI 4.25, UFAS 4.27

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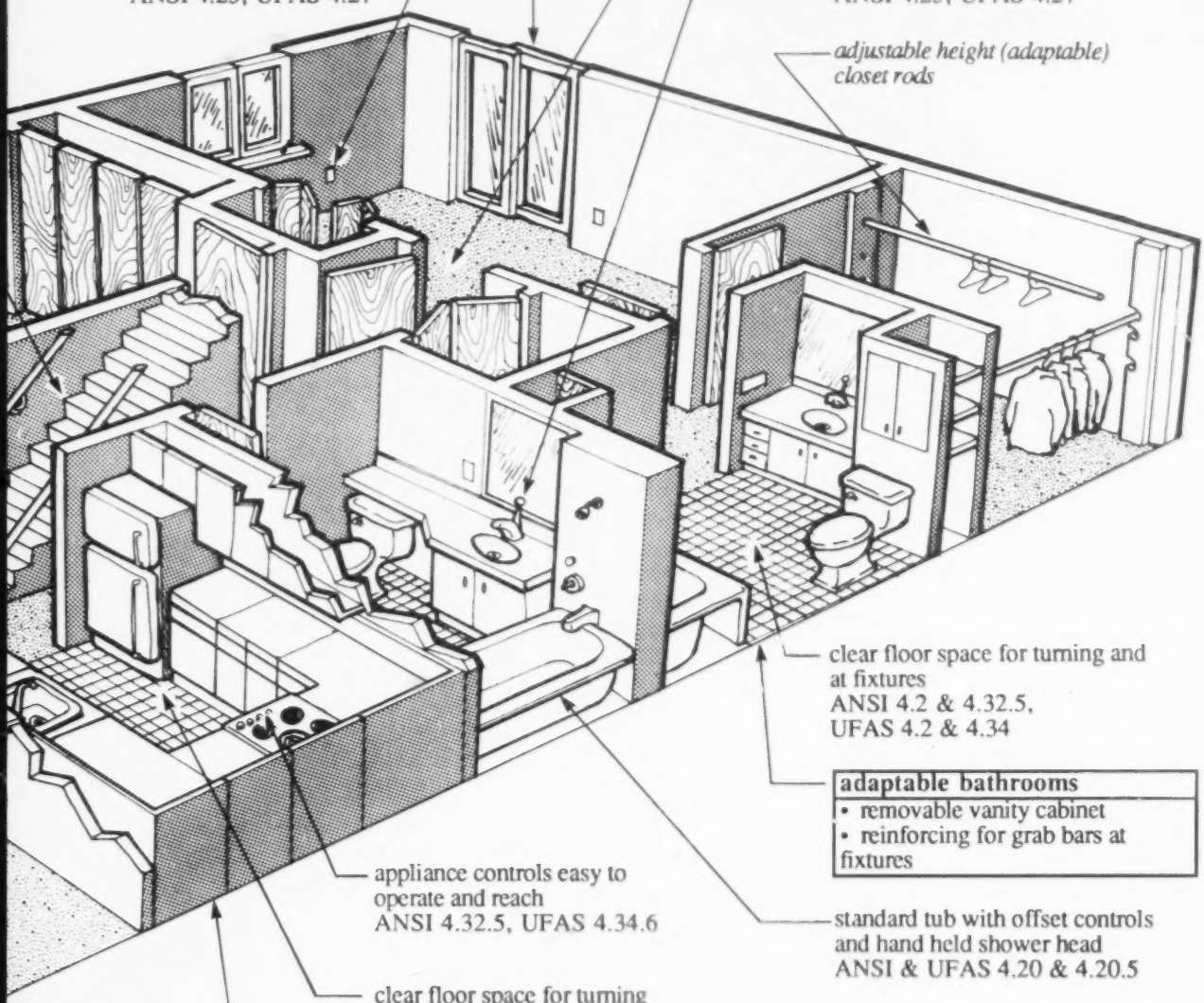
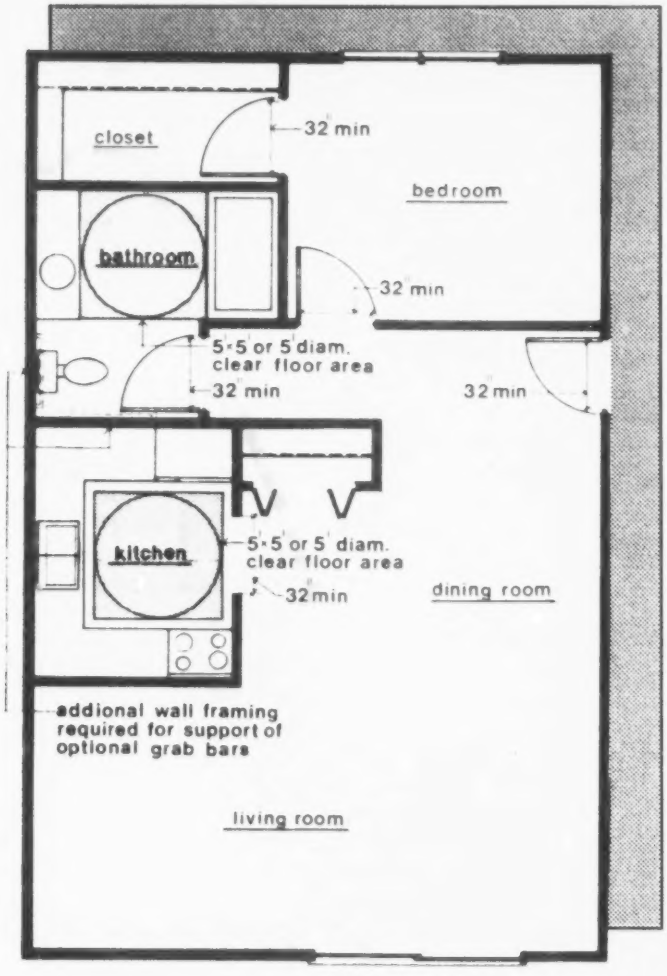

an exit door at the bedroom is an excellent safety recommendation and convenience
electrical receptacles within easy reach and capable of powering alarms for hearing and visually impaired people ANSI 4.25, UFAS 4.27
all passage doors must provide a 32" clear opening ANSI & UFAS 4.13
controls easily operable ANSI 4.25, UFAS 4.27
adjustable height (adaptable) closet rods
clear floor space for turning and at fixtures ANSI 4.2 & 4.32.5, UFAS 4.2 & 4.34
adaptable bathrooms
• removable vanity cabinet
• reinforcing for grab bars at fixtures
appliance controls easy to operate and reach ANSI 4.32.5, UFAS 4.34.6
standard tub with offset controls and hand held shower head ANSI & UFAS 4.20 & 4.20.5
clear floor space for turning and at fixtures ANSI 4.2 & 4.32.5, UFAS 4.2 & 4.34
adaptable kitchen
• removable base cabinet and adjustable counter segment at work surface and sink

(Photo used with permission from: Adaptable Housing, by U.S. Dept. of Housing & Urban Development.)

An Adaptable Home

There will be more specific information on these and other related topics in future issues of this publication.

We cannot solve every design problem, but we can give general ideas and helpful hints and that is what we hope this series of **PAM REPEATERS** will be for you.



Sample Adaptable Apartment showing minimum space requirements. Used with permission from Barrier Free Design Graphics.

RESOURCES

A Guidebook to: The Minimum Federal Guidelines & Requirements for Accessible Design. Washington, DC: 1981. 76 pages. Minimum guidelines and requirements for standards for accessibility and usability of Federal and federally funded buildings and facilities by physically handicapped persons. Available from:

Office of Technical Services
United States Architectural & Transportation
Barriers Compliance Board
Washington, DC 20202
202-472-2700
or
Office of Compliance and Enforcement
United States Architectural & Transportation
Barriers Compliance Board
Washington, DC 20202
202-245-1801

Accessibility and Usability for Physically Handicapped People. New York: 1980. 68 pages. (ANSI A 117.1). Complete revision of the 1961 standard adopted by the American National Standards Institute. Available from:

American National Standards Institute
1430 Broadway
New York, NY 10018

Accessibility Modifications: Guidelines for Modifications to Existing Buildings for Accessibility to the Handicapped, 1976. 66 pages.
This book was produced by Barrier Free Environments, Inc. under contract with the Special Office for the Handicapped within the North Carolina Department of Insurance. It is an illustrated guide to assist people in modifying existing buildings to make them accessible and usable by the physically handicapped. Available from:

N. C. Department of Insurance
Engineering Division
P. O. Box 26387
Raleigh, NC 27611
919-733-3901

Adaptable Housing: A Technical Manual for Implementing Adaptable Dwelling Unit Specifications, 1987. 77 pages.
An illustrated manual describing methods for implementing adaptability in housing.
($3.00 per copy.) Available from:

U.S. Department of Housing and Urban Development
Office of Policy Development and Research
HUD USER
P. O. Box 280
Germantown, MD 20874
1-800-245-2691
Publication number: HUD-1124-PDR

Barrier Free Design Graphics, illustrates rules which were filed with the Secretary of State on March 17, 1987, and which were effective throughout Michigan without local modification on October 1, 1987. The graphics are intended to show the spatial relationships specified in the code requirements.
For a copy contact:

Michigan Department of Labor
Construction Code Commission
Bureau of Construction Codes
Barrier Free Design Division
7150 Harris Drive
Box 30015
Lansing, MI 48909
517-322-1191

Barrier Free Environments Inc., is an architectural and product design firm that provides design and consultation services to individuals, families, small businesses, corporations, and institutions. For more information, contact:

Ronald L. Mace
Barrier Free Environments Inc.
P. O. Box 30634
Raleigh, NC 27622
919-782-7823

Cary, Jane Randolph
How to Create Interiors for the Disabled: A Guidebook for Families and Friends,
New York: Pantheon Books, 1978. 127 pages.

Suggests ways that families and friends of handicapped persons can make a home more accessible.

Hale, Glorya, edited by
The Source Book for the Disabled: An Illustrated Guide to Easier and More Independent Living for Physically Disabled People, Their Families and Friends,
Paddington Press, Ltd., New York & London, 1979. 288 pages. Illustrated with photographs and more than six hundred drawings, this is a comprehensive guide to easier and more independent living for physically disabled people, their families and friends.
(No longer in print)

Handbook for Design: Specially Adapted Housing, Washington, 1978. 79 pages.
An illustrated pamphlet to assist the physically handicapped and the architect/designer in producing the best possible home. Organized to allow quick reference to specific areas of design. Available from:

Department of Veterans Benefits
Veterans Administration
810 Vermont Avenue
Washington, DC 20420
VA pamphlet 26-13

The Inner & Outer Art & Practice of Making Your Home Accessible, Berkeley, 1988. 99 pages.
This book has a focus on the evaluation, design, and construction of interior and exterior access. ($30.00 donation for each book) Available from:

A Publication of the Center for Independent Living, Inc.
Edited and Designed by Michael Daniels
2539 Telegraph Avenue
Berkeley, CA 94704

Johnson, Patricia M.
Creation of the Barrier-Free Interior, 1988. 147 pages. The purpose of this book is to promote an awareness and understanding of the requirements of the manipulatory wheelchair user, and the victim of stroke or arthritis. Their environment can continue to be as convenient, functional, efficient, and usable as possible. ($15.00 per copy) Available from:

A Positive Approach, Inc.
1600 Malone Street, Municipal Airport
Millville, NJ 08332

Uniform Federal Accessibility Standards, Washington, DC: 1984. 88 pages. This document presents uniform standards for the design, construction, and alteration of buildings so that physically handicapped persons will have ready access to and use of them in accordance with the Architectural Barriers Act, 42 U.S.C. 4151-4157. Available from:

The Architectural and Transportation Barriers
Compliance Board
General Services Administration
Design Division
5th Floor
1111 18th Street, NW
Washington, DC 20036-3894
Attn: Steve Mc Cormick
202-566-0989

Universal Design: Housing for a Lifespan of All People, 1988. 14 pages. The intent of the universal design concept is to simplify life for everyone by making more housing usable by more people at little or no cost. Available from:

U.S. Department of Housing and Urban Development
Office of Public Affairs
Office of Intergovernmental Relations
Washington, DC 20410-0050
Publication number: HUD-1156-PA

This REPEATER contains information for one and two family dwellings. All other dwelling units in Michigan must use the Michigan Barrier Free Design Graphics for specific construction code information.

This document was produced in part through a PL 94-142 State Initiated Grant for PAM Assistance Centre awarded by the Michigan State Board of Education. The opinions expressed herein do not necessarily reflect the position or policy of the Michigan State Board of Education or the U.S. Department of Education, and no endorsement is inferred. This document is in the public domain and may be copied for further distribution when proper credit is given. For further information or inquiries about this project contact Special Education Services, P.O. Box 30008, Lansing, MI 48909.

Barrier Free Contractors/ Consultants

Accessible Concepts
Consultants for Barrier Free Environments
Attn: David A. Wiatrowski
74150 10th Avenue
South Haven, Michigan 616-637-4333

Adaptive Environments
Barrier Free Specialists
543 Stratford
Ferndale, Michigan 48220
313-446-5250

Barrier Free Design and Construction
Attn: R. Charles Fleming
25036 Grand River
Redford, Michigan 48240
313-592-0851

Henry Ofiara, Architect, P.C.
Attn: Henry Ofiara
P. O. Box 5357
Plymouth, Michigan 48170
313-459-9739

Michigan Center for a Barrier Free Environment
Attn: Miriam King
6879 Heather Heath
West Bloomfield, MI 48322
313-626-4907

Quality Construction
Attn: Robert Benson
7937 Shaffer
Dearborn, Michigan 48126
313-557-2332

Tri-State Mobility Equipment Company, Inc.
Attn: Sam Crawford
940 Cleveland Avenue, S.W.
Canton, Ohio 44707
216-489-6666

This list includes contractors and consultants that are currently known to the PAM Centre.

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